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Building Creameries and Organization of Co-operative Creamery Companies

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South Dakota Agricultural College

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SOUTH DAKOTA
Agricultural College
AND
EXPERIMENT STATION

BROOKINGS, S. D.

BULLETIN NO. 46.

FEBRUARY, 1896.

DEPARTMENT OF AGRICULTURE.

BUILDING CREAMERIES AND ORGANIZATION OF
CO-OPERATIVE CREAMERY COMPANIES.

PRINTED BY ORDER OF COUNCIL.

Will A. Beach, Printer and Binder, Sioux Falls, S. D.

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CREAMERIES.

JOHN M. TRUEMAN.

In view of the fact that many letters have been received at the college during the past few months asking for information and advice as to the best methods of organizing co-operative creamery companies, and building and equipping creameries, the following bulletin has been prepared and published:

In organizing a co-operative creamery company the first thing to be done is to secure the assurance of the milk from at least three hundred cows. It would not be wise to go on with plans for building a creamery unless the milk from that number of cows can be obtained. Having made sure that there will be an adequate supply of milk, the stock may be subscribed. The shares may consist of from ten to fifty dollars each according to existing conditions. There are generally enough farmers in a community who can pay cash for their shares to supply money to make the first payment on the plant. Those who have little ready money can be allowed to pay a certain percentage in cash and the remainder in monthly installments to be deducted from their share of the creamery receipts.

Having secured enough stockholders, a corporation is formed, directors elected, and they are authorized to draft articles of incorporation and apply to the state for a charter. The following are the articles of incorporation adopted by the Brookings Co-operative Creamery Company:

ARTICLES OF INCORPORATION
OF THE
BROOKINGS CO-OPERATIVE CREAMERY CO.,
OF BROOKINGS, BROOKINGS COUNTY, S. D.

The undersigned, desiring to incorporate under the laws of the State of South Dakota, relating to corporations, have adopted and signed the articles following:

ARTICLE I.

NAME AND PURPOSE.

The name shall be "Brookings Co-operative Creamery Company," and the purpose for which this corporation is formed is to manufacture and sell butter and other dairy products, with power to purchase, build, or lease the necessary buildings and grounds for the transaction of such business.

ARTICLE II.

PLACE OF BUSINESS AND TERM.

The place where the principal business is to be transacted is Brookings, County of Brookings, State of South Dakota, and the term for which it is to exist shall be twenty years.

ARTICLE III.

CAPITAL STOCK.

The capital stock of this corporation shall be five thousand (\$5,000) dollars, divided into one hundred (100) shares of fifty (\$50) dollars each. The said association may begin business when fifty shares of the capital stock have been subscribed.

ARTICLE IV.

DIRECTORS AND OFFICERS.

The affairs of the Association shall be managed by five directors, who shall be elected annually by the stockholders

on the fourth Saturday in January in each year. The following shall be the directors of said Association until the annual election next ensuing:

Mr., whose post office address is Brookings, South Dakota, who shall be president.

Mr., whose post office address is Brookings, South Dakota, who shall be vice-president.

Mr., whose post office address is Brookings, South Dakota, who shall be secretary.

Mr., whose post office address is Brookings, South Dakota, who shall be treasurer.

Mr., whose post office address is Brookings, South Dakota, who shall be director,

All of whom shall hold their respective offices until their successors are elected and qualified. In witness whereof, we have hereunto set our hands and affixed our seals this..... day of, 1896.

In presence of	} (Seal.)
.....	 (Seal.)
.....	 (Seal.)
	 (Seal.)
	 (Seal.)
	 (Seal.)
	 (Seal.)

STATE OF SOUTH DAKOTA, {
County of Brookings. } ss.

On this..... day of A. D. 1896,
before me personally appeared
.....
..... and known to me to
be the identical persons named in, and who executed the
within and foregoing articles of incorporation, and they ac-
knowledgeed to me that they executed the same.

Having secured a charter, the directors call a meeting,
within thirty days from date of legal incorporation, and
adopt a set of by-laws. The Brookings Co-operative Cream-

ery Company adopted the by-laws following, which will serve as an excellent model:

BY-LAWS

Of the Brookings Co-Operative Creamery Co., passed and adopted by a majority of the owners of the Capital stock thereof.

ARTICLE I.

SECTION 1. The government of this Association and management of its affairs shall be vested in a board of five directors.

SEC. 2. The regular annual meeting of stockholders for election of directors and for the transaction of such other business as may come before it shall take place on the fourth Saturday of January of each year. All meetings shall be held where the principal business of the Association is carried on.

SEC. 3. All voting shall be by ballot unless the rules be suspended by a two-thirds vote, in which case the voting may be done by acclamation; except in the election of directors, who must be elected by ballot.

ARTICLE II.

SECTION 1. Voting may be done by proxy but the proxy must be given in writing, signed by the stockholder, and cannot be voted by anyone not himself a bona fide stockholder having stock in his own name on the books at least ten days prior to the election.

SEC. 2. Each stockholder shall be entitled to one vote for each share of stock owned by him, and in his name on the stock books of the association at least ten days prior to the time of meeting.

SEC. 3. A majority of stockholders shall constitute a quorum for the transaction of business.

ARTICLE III.

SECTION 1. Special meetings of the stockholders shall be called by the president on the written demand of at least five

stockholders, by giving at least one week's notice thereof, which notice shall state the object of such meeting and shall be deposited in the Brookings post office addressed to each stockholder at his place of residence, or delivered to him personally.

ARTICLE IV.

SECTION 1. Immediately after the election of directors they shall organize by the election of a president, a vice-president, and a secretary, all of whom shall be of their number, and a treasurer. Said officers shall hold said offices for one year from the date of their election and qualification, or until their successors are elected and qualified, unless sooner removed according to law.

SEC. 2. The president shall call and preside at all meetings, sign all certificates of stock issued, and all contracts made by the Association and perform such other duties as properly belong to his office.

SEC. 3. In the absence or inability of the president, the vice-president shall perform all the duties of the president.

ARTICLE V.

SECTION 1. The secretary shall keep a correct record of the proceedings of each meeting of the Association, notify members of all special meetings when requested by the president so to do; keep a true record of all business transactions; make and countersign all certificates of stock issued; take charge of and safely keep all books, records, and papers; collect all moneys belonging to the Association, and immediately pay the same to the treasurer, taking his receipt therefor; make out all checks on the treasurer, and report the condition of the affairs of the Association to the directors every three months. And he shall also make in writing a report to the annual meeting of the association, setting forth in detail the gross amount of milk receipts from products sold, and all other receipts; the amount paid out for running expenses, and all other matters pertaining to the business of the Association.

SEC. 2. Said secretary shall, not later than the twentieth of each month, compute a sum not to exceed five cents for each one hundred pounds of milk manufactured into butter

or cheese during the previous month, according to the maker's report for said previous month. Said amount so computed shall be subtracted from the total sum which shall be derived from the sale of produce of the factory for said previous month; and he shall draw an order directing the treasurer to place said sum so subtracted to the credit of a reserve fund. Said secretary shall then from the balance of the amount derived from the sale of the produce of said month, subtract an amount sufficient to pay all running expenses incurred during said month (except insurance, repairs and permanent improvements of factory) and the balance shall upon his order be paid to the patrons in their just proportion.

ARTICLE VI.

SECTION 1. The treasurer shall receive from the secretary all moneys due the association, and give his receipt therefor; pay out the same only upon the order of the secretary; keep an account of all moneys received and disbursed by him, in a suitable book kept for that purpose; he shall make to the association at its annual meeting a full report of all moneys received, and from whom received, and of all money paid out and for what purpose; he shall from time to time make such other reports relative to the affairs of the association as shall be required of him by the directors.

ARTICLE VII.

SECTION 1. The secretary and treasurer shall each give bonds to be approved by the directors to the Association in the sum of two thousand dollars, conditioned on the faithful discharge of their duties; said bonds shall be deposited with the president.

SEC. 2. The secretary shall receive such sum for his services as may be allowed by the board of directors, said sum not to exceed twenty five dollars per month while the creamery is run during the first year. The directors and president shall each receive one dollar and fifty cents for each day or part of a day spent in attending regular meetings only.

ARTICLE VIII.

SECTION 1. The directors shall hold at least one meeting every three months for the purpose of ascertaining the true

state of affairs of the Association, and to examine the books of the butter or cheese maker, and of such other officers of the Association as they may deem necessary; and said directors shall give to the secretary such advice and instruction as to the management of the business, and as to the manner and time of selling produce as they may deem necessary, or when requested so to do by him. No person is eligible to the office of director herein unless he be the owner of at least one share of stock. Whenever a vacancy occurs in the office of director such vacancy shall be filled by an appointee of the board.

SEC. 2. Regular meetings of the board of directors shall be held on the Saturday first following the annual election, and upon the same Saturday in each third month thereafter.

SEC. 3. Special meetings of the board of directors may be called by the president or secretary upon a written request of two directors, and notice shall be given at least twenty four hours before time of meeting.

ARTICLE IX.

SECTION 1. On full payment of each share of stock the subscriber thereof shall be entitled to receive a certificate of stock, signed by the president and secretary, and stamped with the seal of the association; and not more than twenty five per cent of the capital stock shall be sold to persons who are not patrons of the creamery.

SEC. 2. All stock issued shall bear interest from date of issue at the rate of ten per cent per annum, payable annually, said interest to be paid out of the reserve funds. All expenses of improvements, insurance and permanent improvements placed in or upon the factory shall be paid out of the reserve fund.

ARTICLE X.

SECTION 1. Stock may be transferred by assignment in writing, which assignment shall be acknowledged before the secretary of the Association, or before some officer authorized to use a seal and take acknowledgment of deeds.

ARTICLE XI.

SECTION 1. The milk delivered to the Association shall be in good condition and suitable for the purpose for which

it is delivered, and it shall be the duty of the maker to reject any milk offered that is not in good condition. Said maker shall keep a correct account with each patron of the amount of milk delivered by him, and the amount of fat contained in said milk as determined by the Babcock Milk Test, and at the end of each month shall, credit said patron with the number of pounds of fat contained in said milk furnished by him, and the number of pounds of butter produced during said month from said amount of fat.

SEC. 2. Patrons furnishing whole milk shall be allowed to draw from the skim milk or whey tank not to exceed four-fifths of the amount of milk furnished by them. Should a patron take in excess of said amount he shall be subject to a fine of two dollars for each offence, to be paid to the Association.

SEC. 3. The maker shall make out and deliver to the secretary on the first of each month a true statement of the number of pounds of milk delivered by each patron for the preceding month, and the amount of fat contained in same, and the total product of factory for said month, and the number of pounds of cheese or butter, if any, drawn out by each patron.

ARTICLE XII.

SECTION 1. No milk shall be received or business of any kind transacted at the creamery on Sundays.

ARTICLE XIII.

SECTION 1. These by-laws may be altered, amended, or repealed, and other by-laws adopted at any regular or special meeting of the stockholders called for that purpose by the directors, by a vote representing two-thirds of the subscribed stock.

ORDER OF BUSINESS AT STOCKHOLDERS' MEETING.

1. Roll call.
2. Reading of minutes of previous meeting.
3. Election of directors.
4. Reports of secretary and treasurer.
5. Any other business that may come before the meeting.

The above and foregoing by-laws of the Brookings Co.

operative Creamery were duly passed and adopted by a majority of the owners and holders of the capital stock of said Association.

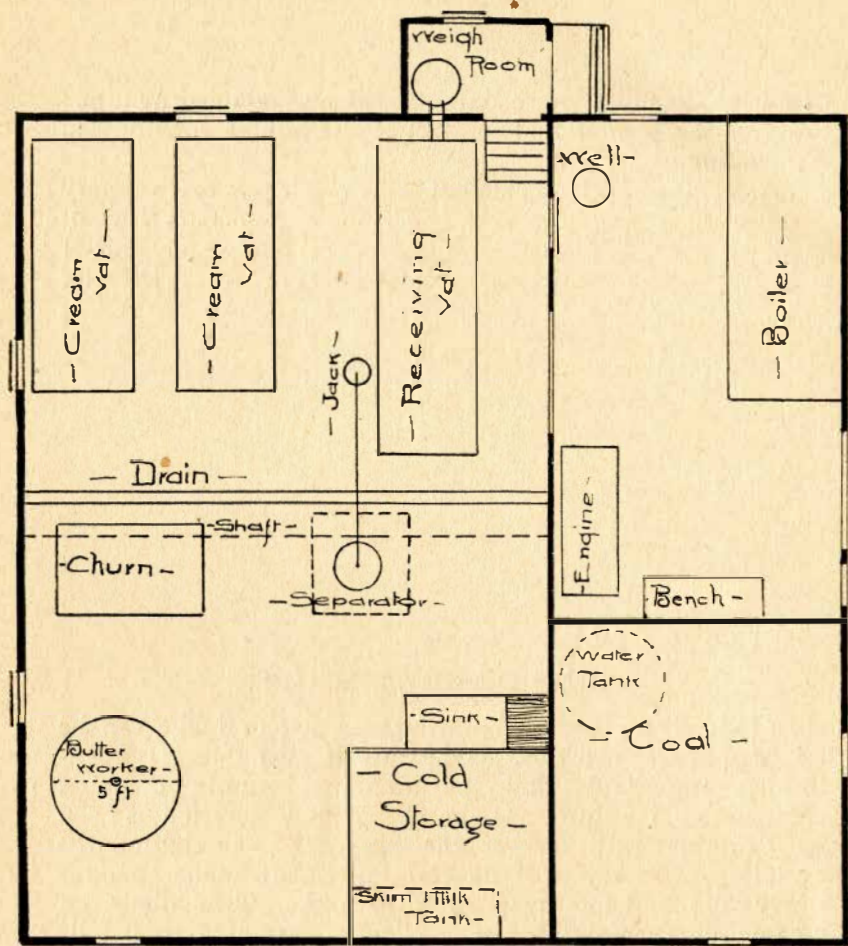
.....	President.....	Secretary
.....		Director
.....		Director
.....		Director

PLANS OF CREAMERIES.

In locating a creamery building see that drainage can be easily obtained, and that good water is available. It is extremely important that an abundant supply of pure, clear water is always at hand. Well water that is good for drinking will answer the purpose. The size of the building necessary will depend upon the number of cows likely to be kept by possible patrons. Two plans for creameries are given below. Plan A is suited to handle from ten to fifteen thousand pounds of milk daily, while plan B can accommodate over twenty five thousand pounds. Plan A is well suited to the average farming community. It is compact, giving a large capacity for the size of the building.

The main building is 22 feet wide by 34 feet long, with a lean-to 12 by 22 feet.

The accompanying cut shows a convenient arrangement of the vats and machinery. The skim milk vat is on top of the cold storage room. A rotary pump is used to force the skim milk from the separator into this vat. A water tank may be placed over one corner of the coal room.

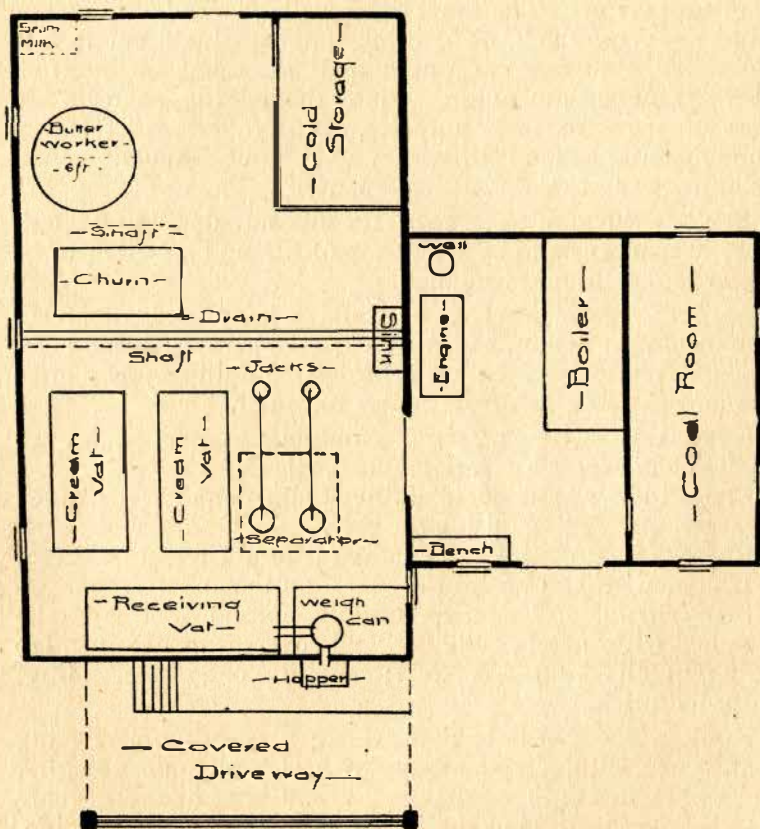


— Plan A —

Scale $\frac{1}{8}$ in to the foot

When a large creamery is needed, plan B is recommended. It is in substance a plan of the Brookings creamery, and presents an excellent arrangement for large capacity and convenient working. The plan of having the milk emptied into a hopper on the outside of the building is a good one, and is in successful operation. A platform under a covered driveway gives the patron an easy opportunity to empty his

milk into the hopper. The maker can then draw it into the weigh can at his own pleasure. A window gives a means of communication between the patron and maker, and there is no need of the patron entering the creamery. One patron can be emptying his milk into the hopper while the maker is weighing and sampling the previous lot.



—Plan B—

Scale $\frac{1}{12}$ in. to the foot.

Below are given practically the building specifications of the Brookings Creamery, which with changes in dimensions will apply for plan A as well.

The creamery building shall be 24 feet wide by 40 feet long by 12 feet high, with an annex to main building in the form of an L, 20 feet wide by 22 feet long and 12 feet high.

FOUNDATION. The foundation wall is to be built of stone 16 to 18 inches thick, or of brick one foot thick, one foot or more below surface of ground and not less than one foot above ground at any point. Under the building shall be two rows of piers 12 inches square, about 6 feet apart and of same material as foundation. A solid stone foundation shall be built to the top of floor for separators.

SILLS. Sills are to be 2x8 laid on wall double and well spiked, cross joists to be set on top of sill, and studding to be set on top of sill and toenailed.

JOISTS. Floor joists to be 2x8, to be placed 16 inches from center to center, resting on center girders; joists more than 12 feet long to be well bridged. Ceiling joists to be 2x6 and placed 2 feet from center to center.

STUDDING AND PLATES. Studding to be 2x4 set 16 inches from center to center.

Plates to be 2x4 doubled, joints broken, and well spiked together, and spiked on top of studs.

RAFTERS. Rafters to be 2x6 and placed 2 feet from center to center, with 1x6 braces in truss form to support roof.

SHEATHING. The entire building except roof is to be sheathed with matched lumber, and covered with 6-inch lap siding, quality known as No. 1; or with No. 27 steel siding, imitation brick.

ROOF. The roof is to be covered with common roofing boards, and with a good quality of cedar or pine shingles, laid five inches to the weather. A ventilator five feet square is to be placed in the center of the roof of the main building.

PAPER. Water proof building paper is to be used between sheathing and siding, and between ceiling and studding.

CEILING. The manufacturing room, and boiler and engine room, are to be ceiled with 4 inch ceiling, tongued and grooved. The fuel room is to be lined with common boards as high as the plates.

CORNICE. The entire building is to be finished with plain cornice, projecting 12 inches from body of building.

FLOORS. The floors in the refrigerator and working room, shall be single, of yellow pine 1 ½ inches thick and matched, (or of four inch Washington fir, planed, matched and laid over one thickness of inch boards,) and laid on a slant of one quarter inch to the foot toward center drain. Floors in coal room to be of plank, and in boiler and engine room of cement.

DRAINS. The manufacturing room shall be supplied with special drains, and floors laid slanting thereto, to conduct properly the slops and drainage from the building.

REFRIGERATOR. The refrigerator is to be as shown on plan, and made with double walls, and with suitable ice box.

WINDOWS. All full windows are to be four lights, 12x30; half windows two lights, 12x30.

DOORS. Doors to be 2 feet 8 inches by 6 feet 8 inches, and double doors 5 feet by 6 feet 8 inches.

HARDWARE. The building is to be supplied with customary hardware, such as mortise locks, bolts, steel hinges, and other fastenings needed for all doors and windows.

PAINTING. The entire building is to be painted with two coats of good paint on outside, except roof. Inside to be covered with boiled linseed oil and shellac.

All to be done in workmanlike manner.

Such a building can be erected in Brookings for about \$1,150; and a building with similar specifications, changed only to suit the size and outline of plan A, can be built for \$950.

These estimates will be found safe if the local conditions of freights, labor, etc., are taken into account.

The following list of apparatus is recommended for plan A. The same articles would be necessary for plan B but of larger size:

- 1 15-horse power horizontal boiler.
- 1 10-horse power engine.
- 1 Separator, belt power, 2,500 lbs. per hour.
- 1 400-gallon milk receiving vat.
- 2 300-gallon cream vats.
- 1 Tempering vat, or Larkey heater.
- 1 60-gallon weigh can.

- 2 Rotary pumps, No. 1.
- 1 600-lb. 2-beam scales.
- 1 300-gallon cedar churn.
- 1 Milk conductor head and fifteen feet of conductor pipe.
- 1 Butter worker, Fargo's, National, or Mason's.
- 1 Vat milk strainer.
- 1 36-bottle Babcock Test.
- 1 Wash sink.
- 1 200-gallon skim milk vat.
- 1 200-gallon buttermilk vat.
- 1 10-barrel water tank.
- 2 12-inch hair sieves.
- 1 8-oz. graduate for color.
- 1 Covered crank, suction and force pump, with tight and loose pulleys.
- 1 Box of paste, and brush.
- 1 Set of dates, 12 months.
- 1 Buttermilk strainer.
- 1 Churn cream strainer.
- 1 240-lb. platform salting scales.

A supply of mops, brooms, brushes, pails, dippers, ladles, butter spades and packer, and accurate thermometers, all shafting, hangers and set collars necessary, all pulleys and belting necessary, all piping necessary for conducting steam and water over the building, all globe and check valves necessary, to be Jenkins Bros. make.

The cost of such an equipment of apparatus, all set up and ready to run, should not exceed \$1,800, making a creamery for handling 30,000 lbs. of milk per day cost something less than \$3,000. Plan A should be built and equipped ready for work for about \$2,400.

A cheese factory should be built much the same as the creamery. The arrangement of vats would be different, and the apparatus more simple. Where a cheese factory is built, it would be wise to put up a building in which butter could be made if desired.

The following list of apparatus would be needed for a cheese factory:

- 1 8 H. P. boiler.
- 2 400-gallon cheese vats.
- 1 Curd mill.

- I 300-gallon whey tank.
- I Milk conductor head and fifteen feet of pipe.
- I Wash sink.
- I Perpendicular curd knife.
- I Horizontal curd knife.
- I Whey strainer.
- I Curd scoop.
- I Flat sided curd pail.
- I Cheddar cheese press with twelve hoops.
- I Young America cheese press with fifteen hoops.
- I 60-gallon weigh can.
- I 600-lb. 2-beam platform scales.
- I 30-bottle Babcock test.

All necessary steam and water piping, with connections and valves, scrubbing brushes, pails, brooms, and mops, and accurate thermometers.

The dairy supply houses will furnish estimates of the cost of a complete outfit. In getting estimates it would be well to write to several reliable firms, such as Cornish, Curtis & Green of St. Paul; F. B. Fargo & Co. of Lake Mills, Wisconsin; and The Vermont Farm Machine Co., Bellows Falls, Vermont.

The greatest expense to the farmer connected with the creamery business is the transportation of his milk. It would hardly pay a farmer to haul 100 pounds of milk seven or eight miles every day. By the establishment of a "milk route," however, this difficulty may be largely overcome. One man can be employed to haul the milk for several farmers, they paying him so much per hundred pounds.

Another method of overcoming the long distance haul is to build separator stations. If a community is ten miles from any creamery and has not cows enough to establish a creamery, a separator station can be built and the cream hauled to the nearest creamery. In some places this plan has worked well, in others it has failed. It would not be wise to establish such station to handle the milk from less than 200 cows. The station must not be put under incompetent management. The separators must be carefully operated, and the cream well cared for. It should be hauled to the creamery while still sweet, and kept cool in transit so that

the important matter of ripening can be attended to by the buttermaker himself.

An ice house is a necessary adjunct to every creamery. It should be built separate from the creamery. A house 20 feet long, 16 feet wide and 10 feet high will hold about 100 tons of ice. If an abundance of very cold water is at hand less ice will be needed. It is always best, however, to have plenty of ice and for the ordinary creamery 100 tons is a safe amount.

